

Devils Lake Outlet Erosion Mitigation Plan

Prepared by the: North Dakota State Water Commission
March 27, 2006

1) Introduction

Erosion is an ongoing and natural process on the Sheyenne River. It is the North Dakota State Water Commission's (NDSWC) goal to avoid artificially increasing the rate of erosion on the Sheyenne River. Consistent with the Application to Drain #2986, the NDSWC has developed a voluntary, and proactive effort to give downstream landowners a means to mitigate erosion, in the unlikely event that the outlet increases erosion rates.

The United States Army Corps of Engineers (USACOE) studied the erosion effect of a 300 cfs outlet from Devils Lake to the Sheyenne River. Environmental Impact Statement (EIS) studies prepared by the Corps for the larger capacity outlet were utilized to assess the downstream impacts of the state's smaller 100-cfs capacity outlet because it is expected that the lower outlet flow would result in less effect to aquatic habitat and riparian vegetation, smaller changes in river stage, less flow and less flow effects in the Sheyenne River than the larger federal outlet. (USACOE Devils Lake Outlet EIS, Appendix C-166

ftp://ftp.mvp.usace.army.mil/priv/Devils_Lake_Final_Report/). Therefore, it is reasonable to assume that whatever impacts result from a federal outlet, they will be less for the state outlet.

During months when the 300-cfs pumping would occur, the EIS study indicates that it is unlikely that any noticeable erosion would occur (USACOE Devils Lake Outlet EIS, 6-71

ftp://ftp.mvp.usace.army.mil/priv/Devils_Lake_Final_Report/). The state's 100-cfs outlet is expected to show even less impact on the natural erosion rates of the Sheyenne River. (USACOE Devils Lake Outlet EIS, A-279 ftp://ftp.mvp.usace.army.mil/priv/Devils_Lake_Final_Report/) Changes in depths of flow were negligible, adjustment in channel slope were expected to be very minor, changes in meander length, amplitude, and shape were small, and top widths of the flow would change only about three feet at a few sections in the upper reaches. (USACOE Devils Lake Outlet EIS, A-275 ftp://ftp.mvp.usace.army.mil/priv/Devils_Lake_Final_Report/)

Also, there would likely be minimal effect on the terrestrial communities (vegetation) along the Sheyenne River or Red River (USACOE Devils Lake Outlet EIS, 6-71

ftp://ftp.mvp.usace.army.mil/priv/Devils_Lake_Final_Report/). Therefore, the state outlet will have minimal effect on the terrestrial community.

While the anticipated erosion resulting from the operation of the state outlet is thought to be minimal, as a safeguard, the NDSWC desires that an erosion mitigation plan (EMP) be in place prior to operation as a safeguard.

2) Pre-operation Conditions

In an effort to establish a baseline understanding of streambank erosion on the Sheyenne River, the condition of the areas in question prior to operation of the outlet must be catalogued prior to the operation of the outlet to recognize changes resulting from the outlet operation. Work in this regard has been done by the USACOE in their EIS, and through various remote data, such as aerial photography. However, on the ground data collection provides a greater degree of precision in determining erosion rates.

The State has arranged for low-level aerial photographs to be taken of the entire length of the Sheyenne from the insertion point to the confluence with the Red River. These photographs as well as any others available will serve to determine how much outlet-related erosion will have taken place since operation of the outlet commenced. Any additional evidence of natural erosion produced prior to operation of the outlet will be highly valuable. The collection of this data by concerned local property owners or other affected entities (road department, water board, township board, etc) is highly encouraged and recommended.

3) Post-operation conditions

Erosion is dependent on many factors, one of which is flow rate. The flows in and those introduced to the Sheyenne River by the outlet will be extensively monitored. Resultant effects on river stages will be calculated from USGS rating curves or possibly from the USACOE hydraulic model.

The NDSWC will coordinate with local officials regarding erosion issues along the Sheyenne River. Landowners are also encouraged to contact the NDSWC regarding erosion and questions. As much information as possible on pre-existing conditions should be gathered before an application is submitted. Greater accumulation of evidence will benefit any local landowner or entity seeking assistance to an erosion problem.

Any application for erosion mitigation received by the NDSWC will be analyzed based on natural flow versus additional outlet flows, and resultant changes in river stages to estimate the effect of the outlet operation. Floods and recent high flow events along with other factors such as channel alteration, dikes, ice damage, animal activity, etc... will be examined as possible causes of erosion.

4) Mitigation

The NDSWC has established procedures to deal with concerns from landowners about erosion problems that potentially could be the result of operation of the outlet via the EMP. As a result, a process has been developed for a landowner to record their issues with an appropriate entity, have their concerns objectively analyzed, and have that concern reviewed in a timely manner.

The percentage of cost share will be established on a case by case. The percent of cost share for mitigation measures will be based on magnitude of effect from the outlet operation.

5) Filing an Application

In the event that a landowner becomes aware of a possible erosion problem on their land, that they believe is the result of outlet operations, that citizen's next step is to contact either the NDSWC or their county water board to notify them of a potential problem, and at that time, get a copy of the Devils Lake Outlet Erosion Mitigation Application Form.

The NDSWC will review the completed erosion mitigation application. The NDSWC will review the application claims, evaluating them under the criterion outlined previously in this document. Upon reaching a preliminary decision, the NDSWC will send the document to the appropriate county water board for their review. The NDSWC will consider the inputs, if any from the county water board, and then respond to the landowner accordingly with a written reply.

The Devils Lake Outlet Advisory Committee, which meets at least twice a year, will be advised of any applications, and the NDSWC's response to those applications.

6) Further Information

For further information on the EMP, please contact the NDSWC, at:

Mailing Address: North Dakota State Water Commission
900 East Boulevard Avenue, Dept 770
Bismarck, ND 58505-0850

Phone: (701) 328-2750

Fax: (701) 328-3696

General E-mail: swcinfo@state.nd.us